

## CLAIMS.

1. A fluid jet generating apparatus comprising swirling jet flow generation means.

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2. An apparatus as claimed in Claim 1 comprising a duct having a fluid inlet and a fluid outlet, and a propeller mounted for co-axial rotation within the duct.

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3. An apparatus as claimed in Claim 2 wherein the propeller is adapted to produce a variety of swirling jet flows.

4. An apparatus as claimed in Claim 2 or Claim 3 further comprising a disc (18) mounted co-axially in front of the propeller, wherein the disc cuts-out axial flow through a central part of the propeller.

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5. An apparatus as claimed in any one of claims 2 to 4 wherein the propeller has a rounded nose cone (19).

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6. An apparatus as claimed in any one of claims 2 to 4 wherein the propeller has a conical nose cone.

7. An apparatus as claimed in Claim 1 comprising fluid flow means to cause the flow of a fluid through a duct having a fluid inlet and a fluid outlet, where the duct incorporates a static swirl generator adapted to impart swirl to the fluid.

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8. An apparatus as claimed in any one of claims 2 to 7 wherein the fluid outlet of the duct further comprises a flared nozzle.

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9. An apparatus as claimed in any one of claims 1 to 8 further comprising mounting means for mounting the fluid jet apparatus, the mounting means enabling control of an angle and elevation of the jet above a surface.

10. An apparatus as claimed in any one of claims 2 to 9 further comprising flow intake restriction means to vary the amount of inflow to the duct.

11. An apparatus as claimed in Claim 10 wherein the flow intake restriction means  
5 comprises an arrangement of louvre plates.

12. An apparatus as claimed in any preceding claim wherein the apparatus generates a jet having a pre-determined Jet Swirl Number of from  $S = \text{about } 0.3$  to  $S = \text{about } 4$ .

10 13. An apparatus as claimed in Claim 7 comprising a barrel-shaped body enclosing a fluid flow duct 46 closed at a first end and open at a second end; wherein said first end includes a recessed inner chamber 47, having a plurality of inlet passages 48 leading thereinto, generally tangentially disposed with respect to inner  
15 chamber 47, formed in opposing pairs each pair being axially spaced and rotationally displaced with respect to an adjacent pair.

14. An apparatus as claimed in Claim 13 comprising four inlet passages 48, arranged in two axially spaced pairs rotationally displaced by  $90^\circ$ .

20 15. An apparatus as claimed in Claim 13 or Claim 14, wherein the second, or open, end of duct 46 comprises a flared outlet.

25 16. An apparatus as claimed in any one of Claims 13 to 15 wherein the body is provided with a threaded portion for attachment of the apparatus to a deployment means, the deployment means comprising fluid flow means to supply a flow of a fluid to the inlet passages 48.

30 17. A dredging, scouring, excavating or cleaning apparatus comprising an apparatus as claimed in any one of claims 1 to 16.